

CLAIMS

1. An immunopotentiator for mammals, which comprises as an active ingredient a nucleic acid containing a special nucleic acid base, a derivative thereof or a plasmid having the nucleic acid containing the special nucleic acid base.

2. The immunopotentiator as claimed in claim 1, wherein the special nucleic acid base is at least one selected from the group consisting of 8-oxoguanine, 8-oxoadenine, 2-oxoadenine, 5-hydroxyuracil, 5-formyluracil, 5-formylcytosine, 8-nitroguanine, thymine glycol, cytosine glycol, hypoxanthine, oxanine, pyrimidine dimmer, O⁶-methylguanine and O⁴-methylthymine.

3. The immunopotentiator as claimed in claim 1, wherein the special nucleic acid base is a microbial nucleic acid-specific modified base.

4. The immunopotentiator as claimed in claim 3, wherein the microbial nucleic acid-specific modified base is at least one selected from the group consisting of N⁶-methyladenine, 5-hydroxymethyluracil and 5-hydroxymethylcytosine.

5. The immunopotentiator as claimed in claim 3, wherein the nucleic acid containing the microbial nucleic acid-specific modified base is a nucleic acid having a base sequence of SEQ ID NO: 4.

6. The immunopotentiator as claimed in any of claims 1 to 5, which further comprises as an active ingredient a nucleic acid containing a microbial nucleic acid-specific non-methylated CpG sequence or a plasmid having the nucleic acid containing the microbial nucleic acid-specific

non-methylated CpG sequence.

7. The immunopotentiator as claimed in claim 6, wherein the nucleic acid containing the microbial nucleic acid-specific non-methylated
5 CpG sequence is a nucleic acid having the base sequence of SEQ ID NO: 2.

8. The immunopotentiator as claimed in any of claims 3 to 7, wherein the microbe is a virus or a bacterium.

10 9. The immunopotentiator as claimed in claim 8, wherein the bacterium is Escherichia coli.

10. A process for producing an inflammatory cytokine, which comprises administering the immunopotentiator as claimed in any of
15 claims 1 to 9 to cultured cells to enhance an immunoactivity of the cultured cells and produce the inflammatory cytokine.

11. A process for producing an inflammatory cytokine, which comprises simultaneously administering to cultured cells the
20 immunopotentiator as claimed in any of claims 1, 2, 3, 4, 5, 8 and 9 together with a composition comprising as an active ingredient a nucleic acid containing a microbial nucleic acid-specific non-methylated CpG sequence or a plasmid having the nucleic acid containing the microbial nucleic acid-specific non-methylated CpG sequence to further enhance an
25 immunoactivity and produce the inflammatory cytokine.

12. Cultured cells producing an inflammatory cytokine, to which the immunopotentiator as claimed in any of claims 1 to 9 is administered to enhance an immunoactivity.

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13. Cultured cells producing an inflammatory cytokine, to which the immunopotentiator as claimed in any of claims 1, 2, 3, 4, 5, 8 and 9 together with a composition comprising as an active ingredient a nucleic acid containing a microbial nucleic acid-specific non-methylated CpG sequence or a plasmid having the nucleic acid containing the microbial nucleic acid-specific non-methylated CpG sequence are simultaneously administered to further enhance an immunoactivity.

14. The cultured cells as claimed in claim 12 or 13, which are derived from mammals including humans.

15. A method for enhancing an immunoactivity of mammals, which comprises administering to mammals the immunopotentiator as claimed in any of claims 1 to 9 to enhance an immunoactivity of mammals.

16. A method for enhancing an immunoactivity of mammals, which comprises simultaneously administering to mammals the immunopotentiator as claimed in any of claims 1, 2, 3, 4, 5, 8 and 9 together with a composition comprising as an active ingredient a nucleic acid containing a microbial nucleic acid-specific non-methylated CpG sequence or a plasmid having the nucleic acid containing the microbial nucleic acid-specific non-methylated CpG sequence to further enhance an immunoactivity of mammals.

17. Non-human mammals to which the immunopotentiator as claimed in any of claims 1 to 9 is administered to enhance an immunoactivity.

18. Non-human mammals to which the immunopotentiator as claimed in any of claims 1, 2, 3, 4, 5, 8 and 9 together with a composition

comprising as an active ingredient a nucleic acid containing a microbial nucleic acid-specific non-methylated CpG sequence or a plasmid having the nucleic acid containing the microbial nucleic acid-specific non-methylated CpG sequence are simultaneously administered to further
5 enhance an immunoactivity.

19. The non-human mammals as claimed in claim 17 or 18, which are mice.